VOLUME 11

NUMBER 2

APRIL 1985

WISCONSIN MAPPING BULLETIN

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Est. 1973

TOPOGRAPHIC MAPPING COMMITTEE

The Wisconsin Topographic Mapping Committee met on Monday, April 22, 1985 and reviewed the status of Wisconsin's cooperative programs with U. S. Geological Survey.

1. As reported in v. 10, no. 4, p.1, the last of the 7.5-minute topographic mapping program continues through the printing process at the U.S.G.S. plant in Reston, VA. We are continually receiving final lithographic copies. The expected completion date for all 1,154 topos is now June of this year. We are waiting for approximately 35 topo quads from the printer.

2. The state's current fiscal cooperative program to produce 1:100,000-scale, planimetric quads (format 1° by 30') was reviewd by the Committee. The chairperson, Dr. Meredith E. Ostrom, State Geologist, reported that completion of this base map is scheduled for the end of the current federal fiscal year, September 30, 1985. It's completion is important, for it allows the Wis. Dept. of Transportation to proceed with their statewide raster digitization program as outlined in the Wisconsin Mapping Bulletin (v. 11, no. 1, p.1). This program also allows the state to proceed with the 100,000-scale, county format, topographic mapping program during the next fiscal year. (see below)

3. Dr. Ostrom also received a proposed schedule for the production of the 1:100,000-scale, county format, topographic maps (conventional contour interval, i.e. feet). The U.S.G.S. has stated, with cooperative funding, production of all 72 county format maps will be completed to the printing phase during their '86 fiscal year, which ends on September 30, 1986. It is estimated that the printing will take an additional 6 months. The Committee is anticipating that the state will have complete county format, topographic maps by the spring of 1987. Progress of this program will be detailed in this Bulletin.

4. The Topographic Mapping Committee also discussed future cooperative programs with the U.S. Geological Survey. The consensus of the Committee was that increased revision of the 7.5' topo quad program was of high priority. The state would specifically direct this program. The Committee also considered cooperation with future digital cartographic programs of the U.S. Geological Survey should rate high priority.

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TOPO MAPPING, continued

The Wisconsin Topographic Mapping Committee is planning a commemorative event to mark the completion of the large-scale topographic mapping program (1:24,000-scale) in the fall of 1985. Representatives from the U.S.G.S. National Mapping Division, Reston, VA and the Mid-Continent Mapping Center, Rolla, MO will attend. This event will coincide with an open house and dedication of the new location of the Wisconsin Geological and Natural History Survey at Mineral Point Road on the near west side of Madison.

SCO COMMITTEE MEETS

On April 12, 1985 the Committee on State Cartography met for their spring meeting. This Committee is the oversight authority for the State Cartographer's Office. The membership is as follows: Prof. Phil Muehrcke, Chairperson, UW-Geography; Prof. Tom Lillesand, UW-Remote Sensing Center; Prof. Paul Wolf, UW-Civil Engineering; Dr. Meredith Ostrom, State Geologist; Mr. Tom Krauskopf, Dept. of Administration; Mr. Dale Marsh, Dept. Natural Resources; and Mr. Tom Carlsen, Dept. of Transportation.

The Committee considered the following items:

1. budget prediction for the Office for fiscal year '86,
2. review of the progress to date and future plans for increased in-state conferences and briefings by the Office,
3. proposals for developmental/ experimental cartographic production items,
4. review of ongoing programs of the Office i.e., catalog production, Wisconsin Mapping Bulletin, inquiries, and personnel staffing, and
5. approval of production of the remotely sensed image map over Sturgeon Bay, WI (see related article for a full description).

Of high interest to the Committee was the State Cartographer's ongoing investigation of the microcomputer-based cartographic systems being considered by local governments. In this regard, the Office would appreciate hearing from its Bulletin readers on any graphic system being installed or contemplated by a local government facility. If an office is interested in our micrographics information collection, please contact Art Ziegler, 608/262-6852.

SW CARTO CONFERENCE

The second* in the continuing series of regional cartographic conferences by the State Cartographer's Office was held February 20, 1985 in the Richland County Courthouse, Richland Center, WI. The day-long conference had 22 attendees representing 8 counties, 1 regional planning office, the district office of DOT in La Crosse, and the field office of SCS at Richland Center. As with the first conference in Antigo, Langlade County, this conference was again well received. The Office would like to express its appreciation to Richland County and the Richland County Zoning Administrator, Mr. Clifford J. Draheim for their assistance in presenting this successful conference.

The Office is planning the third regional briefing for late spring in the west central portion of the state and a fourth in early fall in the northwest area. Announcements will be sent to notify offices and individuals of the specific time and place of these conferences.

*Northeast Cartographic Conference, vol. 10, no. 4, p. 10

EARTH DAY

In case you missed it, Earth Day was the 22d of April. 1985 marked the 15th anniversary of the first national Earth Day established by former Wisconsin Senator Gaylord Nelson and others. Let our mapping, surveying, and remote sensing be used to enhance the Earth and not destroy her.

ILLINOIS MAPPING MEETING

As mentioned in the January 1985 Bulletin, Tom Carlsen from the Department of Transportation and Art Ziegler, State Cartographer, gave a presentation to the Illinois Mapping Advisory Group in Springfield, IL on March 1, 1985. Approximately 40 representatives of various Illinois state agencies were present. The Wisconsin presentation concentrated on the state's efforts to use the U.S. Geological Survey's 1:100,000-scale series.

The Bureau of Census participated in the conference. However, little additional information on their "Tiger" program was made available. In summary the U.S.G.S. and Census are pursuing digital census maps at 1:100,000-scale for all the 48 contiguous states for use as an automated mapping system for the 1990 census. Their immediate objective is the completion of a digital base map by 1987 to which Census will digitally add their census tracks. The Bulletin will report further developments.

TM IMAGE MAP

The State Cartographer's Office will begin distributing an experimental image-map of Sturgeon Bay this July. The base image will be a natural color rendition of a scene (#501391030) received on July 18, 1984 by the Thematic Mapping sensor on board the Landsat-5 satellite.

The data received from this sensor improved both spatially (30m resolu vs. 80m) and spectrally (7 wavelength bands vs. 4) from the data from the MSS sensor aboard Landsats 1-4.

The University of Wisconsin Institute for Environmental Studies Environmental Remote Sensing Center (ERSC) acquired this data as part of their research: "Multipurpose Assessment of Thematic Mapping Data for Coastal Resource Management". This research is funded in part by the U.W. Sea Grant College Program and the William and Flora Hewlett Foundation.

In a cooperative effort, the SCO will be publishing a printed, experimental image map. This product will contain examples of thematic and specialized map products that can be derived from satellite imagery. It's scale will be 1:62,500, comparable to a 15' quadrangle.

Production of the image-map is being accomplished through a variety of local vendors and the U.W. Cartographic Laboratory. Film separations were produced from digital tape by Widen Colourgraphics, Ltd. of Madison, and printing will be done by Litho Productions, Inc. of Madison.

The SCO will automatically mail cop of the image-maps in mid-July to s agency district offices, to regional planning commissions, to county offices, and other organizations. For a copy and/or additional information, contact the SCO. The July Bulletin will give more details.

NHAP AT 1:24,000

[U]sers of 1:24,000-scale topographic maps have a new interpretation tool: up-to-date aerial photographs produced at the same nominal scale as the map sheets they work with.

The photos are a new product available from the EROS Data Center, a facility of the USGS National Mapping Division (NMD), which has been archiving original film acquired under the National High-Altitude Photography (NHAP) Program for the past 6 years. Until now, getting an NHAP photo at a common map scale like 1:24,000 required a custom-made enlargement with a heavy surcharge at order time.

NMD has decided to standardize that enlargement factor and to remove the surcharge. Prints are available for as low as $25 for a black-and-white product, $50 for color infrared.*

Most map users can benefit from having an aerial view of their area of interest because in many cases USGS topographic maps were compiled some years ago and have not been updated recently. All NHAP imagery is at least as recent as 1978. Using an NHAP aerial photo can thus be an excellent means of supplementing the information on a topographic map. Landowners and [s]urveyors, for example, can use these [p]hotos to check and update their information on rights-of-way, roads, landmarks, or any number of features that might not show up on a map.

Both the black-and-white and the color products are provided on 30-inch photographic paper. A standard enlargement factor is applied to the black-and-white products to bring them up to a nominal scale of 1:24,000. The color infrared products, which are acquired by a different camera, are enlarged just 2.43 times to achieve the desired nominal scale. Although the enlargement factors are carefully controlled, program personnel are careful to pointout that these are not orthophotos or rectified products in anyway. Original NHAP imagery, while offering minimal variations in scale, is acquired and held as is, with no additional processing to normalize within-image distortion caused by ground features. All NHAP scales are therefore "nominal."

The flight specifications for an NHAP mission require that the pilot follow predetermined flight lines oriented in north-south direction along the center lines of USGS 7.5 minute quadrangles. The black-and-white photos are quad-[c]entered. There are an average of three [b]lack-and-white exposures and four color-infrared exposures for each 7.5 minute quad.

The black-and-white photographs are exposed at 40,000 feet above mean terrain by a precision aerial mapping camera having a focal length of 6 inches. This produces photographs at a scale of 1:80,000 (1 inch = 1.25 miles) which takes in an area of nearly 130 square miles on the ground. After a 3.33X enlargement, the same area is represented at 1:24,000 scale.

The color infrared film is exposed in a second aerial mapping camera with a somewhat longer focal length: 8.25 inches. The images from this camera come out at a scale of 1:58,000 (1 inch = 0.9 mile). Each exposure covers nearly 68 square miles. Obviously, a different enlargement factor is applied to the color images to arrive at a scale of 1:24,000.

Complete information on areas covered, NHAP acquisition specifications, and the ordering procedure to use when requesting these new 1:24,000-scale products is available from either the EROS Data Center or the Mid-Continent NCIC Mapping Center, please contact them or the State Cartographer's Office.

U.S. Geological Survey
EROS Data Center
Sioux Falls, SD 57198
605/594-6151

U.S. Geological Survey
Mid-Continent Mapping Center
National Cartographic Information Center
1400 Independence Road
Rolla, MO 65401
314/341-0851

*Editor's Note: A 24" x 24", 1:24,000-scale enlargement of the color infrared photography is available from the U.S.D.A. Agricultural Stabilization and Conservation Service for $35.

COUNTY SURVEYORS

The longstanding question of whether the county surveyor's office is a constitutional office or a creation of the legislature will soon be adjudicated, according to Rod Ripley of Spooner, Wis., past president of Wisconsin Society of Lake Surveyors. Ripley is heading a group to test the appointment of surveyors against electing them by filing a lawsuit to have the position placed on the ballot.

Reports from various surveyors in the state indicate that not all county surveyors agree with Ripley that it should be an elected position. There is a fear that incompetent nonsurveyors and politically motivated individuals would use the position and the election process to further their political goals.

If Ripley were successful in his efforts in the matter the desirable goal of all counties to have a county surveyor would be attained, but the office would be vulnerable to the incompetent, the opportunists, and a constant 2-year turnover, while the appointive method insures greater stability and continuity.

(Source: Wisconsin Professional Surveyor, No. 119, Dec. 1985)

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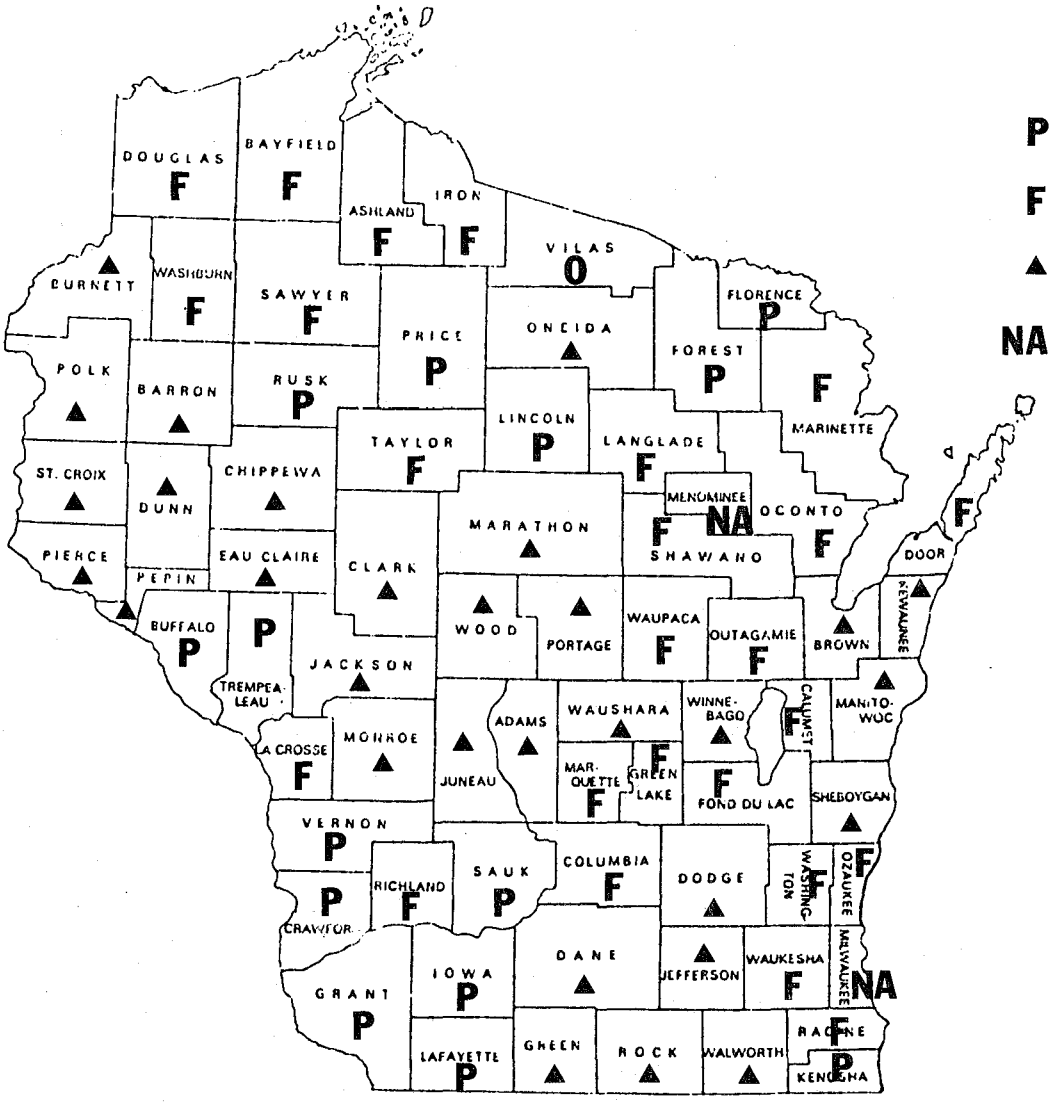
UW-MADISON....

CENTER OF EXCELLENCE

On April 10th, Prof. Reid Bryson, Director of the Institute of Environmental Studies, accepted a certificate from the Modernization of Land Data Systems (MOLDS) designating UW-Madison as an Academic Center of Excellence for its land records program. MOLDS is a nonprofit organization of organizations. It's comprised of 30 groups from Canada, Mexico, The Netherlands, and the United States.

In 1980 the National Research Council stated the need for centers who focussed on land data issues. In 1981, MOLDS formed a committee to define such a Center of Excellence. Richard Almy, who presented the certificate, was the president of MOLDS at that time. Last December, MOLDS determined UW-Madison and the University of New Brunswick to have programs meeting its criteria.

The idea of an interdisciplinary program began 22 years ago with the grassroots efforts of Prof. Bryson. The Institute of Environmental Studies formally began 15 years ago. Three years later Profs. Jim Clapp (Civil Engineering) and Ben Niemann (Landscape Architecture) introduced the idea of the cadastre problem of the United States. This concept for the study of a multipurpose land information system has continually expanded. Prof. Bryson announced the formation of a new Center for Land Information Studies. These professors, their departments, the University, and the town/city/county and regional agencies who've cooperated with them are to be congratulated for their foresight and cooperation.



LEGEND

P Preliminary maps sent to county for public review

F Final maps sent to county for adoption under NR 115

▲ County wetlands ordinance adopted and approved

NA Not applicable

WETLANDS MAPPING STATUS

Steve Fix, Department of Natural Resources Wetlands Inventory, has sent us an update on wetlands mapping. The graphic shows the status of the required public review by each county. Final maps can be purchased from the Wisconsin Geological Survey, 1815 University Ave., Madison, WI 53706, phone 608/263-7389.* For more information on the program, contact Steve at 608/266-0053.

*see "WGS MOVES" article

ORIENTEERING

The July 1984 Bulletin announced the organization of the Badger Orienteering Club. We are happy to report the Club is thriving. They've held several successful events and have many more scheduled. Their first "A" meet will be at Mauthe Lake, Kettle Moraine State Forest (Northern Unit). For more information on or to register for the Memorial Day Event (May 26-27), contact Cathy Yekenevicz, 1529 E. Providence, Milwaukee, WI 53211, phone 414/962-4484. A Madison meet is scheduled for Saturday, June 8th.

The BOC participated in its first U.S. Championships, Nov. 3-4 in Missouri. They placed fourth out of fifteen, ahead of the Marines, Army, and the Chicago Area Orienteering Club!

Map making is a vital part of orienteering. People with surveying, field checking, and design and drafting skills are welcome. A map for Gov. Dodge State Park is available and a map for Indian Lake Park (Dane County System) is in work. There's ample opportunity for first-hand experience.

Annual membership fees are $3.50 individual and $5.00 family. Make checks payable to the Badger Orienteering Club. Mail to BOC, c/o Charles Worringham, 508 F Eagle Heights, Madison, WI 53705.

WGS, AND ITS MAPS, MOVE!

The State Geological and Natural History Survey will move from its campus location on University Avenue into the old Sentry foodstore on the near west side of Madison. The new address is 3817 Mineral Point Road, Madison, WI 53711. All the phone numbers will remain the same. Map Sales will be located immediately inside the front door (rather than hidden in the basement as it is now). There will be ample, free parking, which has always been sorely needed.

Map Sales will close June 17-21st to make the move. Rochelle and Gladys will open their new doors on June 24th. The next Bulletin will announce the WGS's dedication of an openhouse at their new facility.

WETLANDS MAPPERS

Wetlands mappers, there's an organization for you. The Association of State Wetland managers has a committee devoted to wetland mapping issues. The Association hopes to promote and enhance the protection and management of the nation's wetlands resource. For more information contact the Association of State Wetland Managers, Inc., P.O. Box 6, Madison, WI 53701, or phone 608/266-7360.

MORE WGS NEWS

The WGS's moving notice is printed on their first map postcard. The page-size bedrock geology map (minus the cross section) was found to be suitable for a 5 7/8" x 4 1/8" postcard format. Copies of the postcard are available for 25¢. The Wisconsin Geological Survey will have an indexed list of publications available this July. They will also soon issue their latest biennial report. (This is a good source of information on upcoming maps.)

NEW U.S. GEOLOGICAL SURVEY PRODUCTION

These newly published (underlined below) 7½' topographic quadrangle maps (1:24,000) are listed by their location on the superseded 15' topographic map of the area. They are available from the Wisconsin Geological Survey, 1815 University Ave., Madison, WI 53706, 608/263-7389.* Topographic quadrangles are $2.50 each, plus tax, postage and handling.

1 PORT WING 15' TOPO
NE¼ none
NW¼ none
SW¼ Port Wing '84
SE¼ none

2 IRON LAKE 15' TOPO
NE¼ Iron Lake NE, '84
NW¼ Blaine Creek '84
SW¼ Iron Lake '84
SE¼ Hart Lake '84

3 ELLISON LAKE 15' TOPO
NE¼ Island Lake '84
NE¼ Lake Minnesuing '84
SW¼ none
SE¼ none

4 GLIDDEN 15' TOPO
NE¼ none
NW¼ none
SW¼ Shanagolden '84
SE¼ Peeksville '84

5 OSSEO 15' TOPO
NE¼ Augusta East '84
NW¼ none
SW¼ Osseo '84
SE¼ none

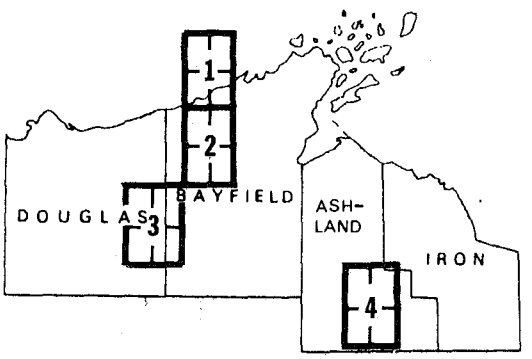
6 PITTSVILLE 15' TOPO
NE¼ Lake Dexter '84
NW¼ Pittsville '84
SW¼ Quail Point Flowage '84
SE¼ Babcock `84

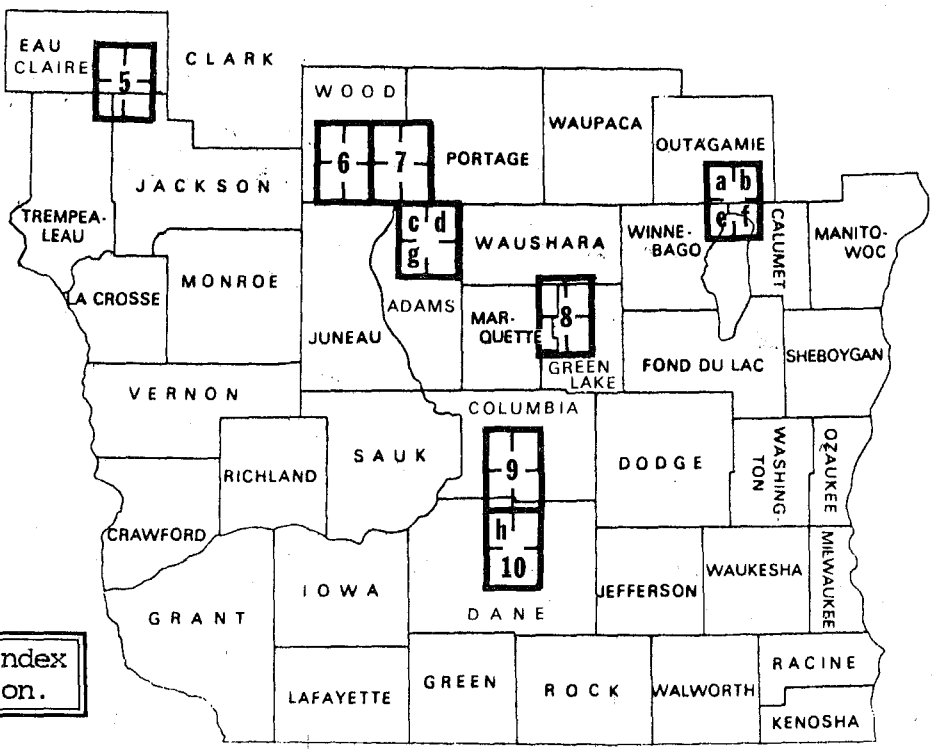
7 WISCONSIN RAPIDS 15' TOPO
NE¼ Wisconsin Rapids North '84
NW¼ Vesper '84
SW¼ Nekoosa '84
SE¼ Wisconsin Rapids South '84

8 NESHKORO 15' TOPO
NE¼ Fairburn '84
NW¼ Neshkoro '85
SW¼ none
SE¼ Princeton East '84

9 POYNETTE 15' TOPO
NE¼ Wyocena '84
NW¼ none
SW¼ none
SE¼ none

10 MADISON 15' TOPO
NE¼ Waunakee '59
NW¼ DeForest '83
SW¼ Madison West '83
SE¼ Madison East '83





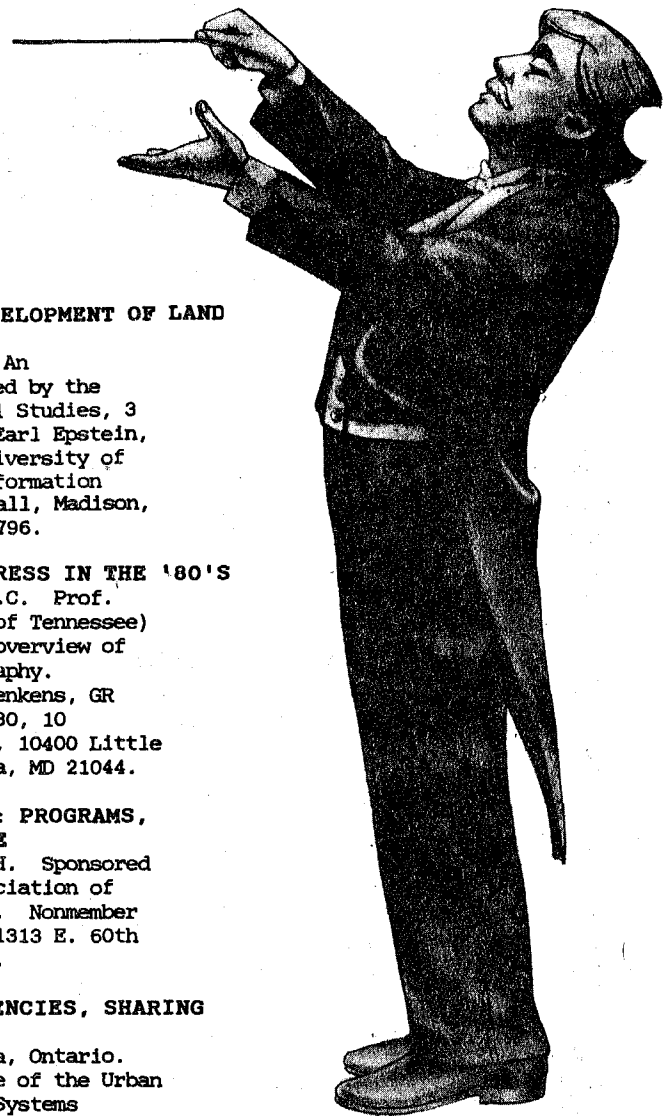
PHOTOREVISED 7½' QUADS

a Appleton '55, '75PR, '84PR
b Kaukauna '74, '84PR
c Arkdale `67, '84PR
d Coloma '68, `84PR
e Neenah '55, '75PR, '84PR
f Sherwood '74, '84PR
g Roche A Cri, '67, '84PR
h Waunakee '59, '74PR, '83PR

Order 7½' quads by name, NOT by the index number or letter used here for location.

*see "WGS MOVES" article

EVENTS, PAST AND FUTURE



MAPS, MAPS, MAPS
April 1, Madison. Howard Deller, Literature Analyst, AGS Collection, UW-Milwaukee Library, presented a well illustrated talk on the history of cartography to the South Central Chapter of the Wisconsin State Genealogical Society in the Auditorium of the State Historical Society.

TECHNIQUES FOR INTEGRATING CAD AND SYSTEMS DRAFTING TO IMPROVE WORK DRAWING PRODUCTION
April 22-26, Madison. A new short course designed to explore the procedures, techniques and benefits of using existing manual drafting systems with automation. $545.00. Dept. of Engineering and Applied Science, UW-Extension, 432 N. Lake Street, Madison, WI 53706, phone 608/263-4705 for more information.

MAPS AND MINDS
April 16-26, Milwaukee. A pictorial exhibit tracing the history of maps, organized by the U.S. Geological Survey and the National Geographic Society. Sponsored by and held at the American Geographical Society Collection, UW-Milwaukee Library. There will be a free series of lectures to elaborate on specific exhibit themes.

May 1 4:00 p.m.
Dr. Roman Draziowsky, Curator, AGS Collection "From Clay Tablets to LANDSAT: The Nature and Use of Maps"

May 8 7:00 p.m.
Dr. Clinton Edwards, Professor, Department of Geography "Maps and the Explorers"

May 15 4:00 p.m.
Christopher Baruth, Maps and Imagery Librarian, AGS Collection "Mapping the Nation"

May 22 7:00 p.m.
Howard Deller, Literature Analyst, AGS Collection "The Mapmakers Art"

COLOR AERIAL PHOTOGRAPHY IN THE PLANT SCIENCES
May 21-24, Ann Arbor, Michigan. The 10th Biennial Workshop sponsored by the Remote Sensing Laboratory, University of Michigan in conjunction with the American Society of Photogrammetry and Remote Sensing. $90, includes proceedings. Contact the RS Lab, University of Michigan, Ann Arbor, MI 48109, phone 313/764-1413.

LEGAL ISSUES IN THE DEVELOPMENT OF LAND INFORMATION SYSTEMS
May 28-June 14, Madison. An intersession course offered by the Institute of Environmental Studies, 3 credits, taught by Prof. Earl Epstein, Surveying Engineering, University of Maine-Orono. For more information contact IES, 70 Science Hall, Madison, WI 53706, phone 608/263-1796.

COMPUTER MAPPING: PROGRESS IN THE '80'S
June 25-28, Washington, D.C. Prof. James Carter (University of Tennessee) presents a comprehensive overview of computer assisted cartography. $680.00. Contact James Jenkens, GR Associates, Inc., Suite 430, 10 Columbia Corporate Center, 10400 Little Patuxent Parkway, Columbia, MD 21044.

MAPPING FOR ASSESSMENT: PROGRAMS, PROCEDURE, AND PRACTICE
June 13-14, Cincinnati, OH. Sponsored by the International Association of Assessing Officers (IAAO). Nonmember fee $200. Contact IAAO, 1313 E. 60th Street, Chicago, IL 60637.

COMPUTERS IN PUBLIC AGENCIES, SHARING SOLUTIONS
July 28 - August 1, Ottawa, Ontario. The 23rd Annual Conference of the Urban and Regional Information Systems Association. Early registration (includes membership) $285. Contact URISA, 319 C Street S.E., Washington, D.C. 20003, phone 202/544-1419.

WISCONSIN SOCIETY OF LAND SURVEYORS
August 23-24, Madison. Their annual summer meeting will celebrate the 200th anniversary of the Public Land Survey System. A ceremony at the State Capitol will feature the establishment of a survey monument in the floor of the capitol rotunda. The State Cartographer's Office documented that Wisconsin's capitol is the only one in the U.S. that sits on a PLSS section corner.

The preliminary agenda for the two-day commemoration is as follows:
Friday, 8/23: 4:30 to 6:30 p.m. Reception in the balcony level of the Capitol rotunda with presentation of the original land patent and remarks by distinguished federal and state officials;
Saturday, 8/24: 10-12noon, actual retracement of the section corner at the Capitol, with positioning of the monument;
Saturday afternoon: Land Records seminar (location to be announced);
Saturday evening: WSLS Dinner and Business meeting. The WSLS invites the public to attend these events. The July Wisconsin Bulletin will announce the final agenda. For more information, contact "Sandy" Sandsnes, Royal Oak Engineering, 5610 Medical Circle, Madison, WI 53705, phone 608/274-0500.

REMOTE SENSING IN FOREST AND RANGE RESOURCE MANAGEMENT
August 20-22, Fort Collins, CO. The 10th Annual William T. Pecora Memorial Remote Sensing Symposium, Colorado State University. For more information contact William Ciesla, USDA Forest Service, 3825 East Mulberry, Fort Collins, CO 80524, phone 303/224-3028.

RACING INTO TOMORROW
September 8-13, Indianapolis. The annual fall technical meeting of the American Congress on Surveying and Mapping (ACSM) and the American Society of Photogrammetry and Remote Sensing (ASP&RS) at the Hyatt Regency. Contact Gary Kent, ACSM/ASPRS Convention Director, P.O. Box 26068, 3675 North Post Road, Indianapolis, IN 46226.

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EVENTS, continued

WISCONSIN COUNCIL FOR GEOGRAPHIC EDUCATION

October 4-5, Milwaukee. The annual meeting of the WCGE opens with an exhibit entitled "Geography in 1885" in the UW-Milwaukee Library's AGS Collection. The exhibit will consist of books, atlases, maps, and globes which could have been used to teach geography one hundred years ago. Prof. Yi-Fu Tuan of the UW-Madison's Geography Department will lecture on "The Good Life". UW-Milwaukee will celebrating 100 years of teaching geography. A special series of talks on the history of cartography will take place on Saturday. All of these events are open to the public. For more information, contact Howard Deller, AGS Collection, UW-M Library, P.O. Box 399, Milwaukee, WI 53201, phone 414/963-6282.

INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT

October 21-25, Ann Arbor, MI. This is the 19th international symposium sponsored by the Environmental Research Institute of Michigan. Early registration is $225. Contact ERIM/Remote Sensing Center, P.O. Box 8618, 3300 Plymouth Road, Ann Arbor, MI 48107.

WESTERN GREAT LAKES REGION, ASP&RS AND SOUTHERN LAKE MICHIGAN SECTION, ACSM

October 31-November 2, DeKalb, IL. A joint conference held at Northern Illinois University.

Thursday, October 31, 1985 "Workshop on Non-Press Color Proofing Techniques," conducted by the NIU Laboratory for Cartography and Spatial Analysis. One-day program with demonstrations by vendors and "hands-on" experience in preparing color proofs. Limited enrollment.

Friday and Saturday, November 1-2, 1985
A technical program will be organized around the following general topics:

"Parcel-Based Mapping Systems for Local Governments and Utilities"
"NAD83 and Its Implications at State and Local Levels"
"Space Shuttle Photography Applications"
"Design and Creation of Image Maps"
"Feedback From the Map Using Community"

For more information, contact: R.E. Dahlberg, Department of Geography, Northern Illinois University, DeKalb, IL 60115, phone 815/753-0631.

IMAGES OF THE EARTH

November 10-13, Chicago. The 5th annual meeting of the North American Cartographic Information Society will focus on cartographic networks, commercial mapping, and the world as a map. More information is available from Prof. Ruth Rowles, Dept. of Geology and Geography, West Virginia University, Morgantown, WV 26506, phone 304/293-5603, or from Christine Reinhard, 143 Science Hall, Madison, WI 53706, phone 608/262-6850.

BROWN COUNTY 1:100,000 (1984)

The U.S. Geological Survey recently released the intermediate-scale, full-color, topographic map for Brown County. The contour interval is 10 meters. Copies are available for $3.60 per print (plus $1 postage on orders less than $10) from the U.S.G.S.- Mid-Continent, National Mapping Division, 1400 Independence Road, Rolla, MO 65401, phone 314/341-0851. Diazo paper prints, film composites and feature separates are available.

MADISON AREA LAKE MAP

The plain paper version is now available for $2.00 (plus tax and postage) from the Wisconsin Geological Survey, Map Sales, 1815 University Ave., 53706.*

*see "WGS MOVES" article

BEDROCK GEOLOGY, N.E. WISCONSIN

The Bedrock Geology of Wisconsin, Regional Map Series NE Sheet (#84-2) by Greenburg and Brown is now available. The 1:250,000-scale, full-color map sells for $4.00 (plus tax and postage). Available from W.G.S. Map Sales (address above).

FORTHCOMING FROM THE W.G.S.

Mike Czechanski, the W.G.S. cartographer, reports the following publications and maps are in various stages of publication:

Pleistocene Geology of the Superior Region, IC 46, by L. Clayton, color.

Subsurface Study of the St. Peter Sandstone in Southern and Eastern Wisconsin, IC 47, by H. Mai and R.H. Dott, Jr., 1:1 million, with cross sections, black & white.

Pleistocene Geology of Brown County, IC 48, by E.A. Need, text to accompany Map 83-1 of same title.

Stage Fluctuations of Wisconsin Lakes, IC 49, by L. B. House, in cooperation with U.S.G.S.

More information is available from Mike (address above), phone 608/263-7393.

SOIL SURVEY OF WAUPACA COUNTY

The USDA, Soil Conservation Service published the Waupaca County soil survey in September 1984. It contains 167 pages of text, a color general soil map, and 96 photobased map sheets delineating soil boundaries at a scale of 1:15,840. The soil survey, authored by A.J. Otter, was made by the SCS in cooperation with the Research Division of the U.W.-Madison's College of Agricultural and Life Sciences. SCS published a limited quantity of the free copies. Contact either the Waupaca County SCS Field Office in Waupaca or the SCS state office at 4601 Hammersley Road, Madison, WI 53711, phone 608/264-5341. ATTN: Soil Survey Section.

USGS MISCELLANEOUS INVESTIGATIONS

The following maps are available from the U.S. Geological Survey, Eastern Distribution Branch, 1200 South Eads Street, Arlington, VA 22202.

Copper distribution in B-horizon soils, Iron River 1° by 2° Quadrangle, Michigan and Wisconsin I-1360-H, by H.V. Alminas, J.D. Hoffman, and R.T. Hopkins. 1984. Scale 1:250,000 (1 inch = about 4 miles). Sheet 31 by 39 inches. $2.80.
The areal distribution is shown by isopleths and symbols on a topographic and simplified geologic base.

Silver distribution in B-hoizon soils, Iron River 1° by 2° Quadrangle, Michigan and Wisconsin I-1360-L, by R.T. Hopkins, H.V. Alminas, and J.D. Hoffman. 1984. Scale 1:250,000. Sheet 30 by 35 inches. $2.80.
The areal distribution is shown by symbols on a topographic and simplified geologic base.

Interpretive geochemical map of the Iron River 1° by 2° Quadrangle, Michigan and Wisconsin, I-1360-N, by H.V. Alminas, J.D. Hoffman, and R.T. Hopkins. 1984. Two sheets. Scale 1:250,000. Sheet 1, 30 by 35 inches. $2.80.
The results are shown by isopleths and symbols on a topographic and simplified geologic base. In addition, isopleth maps of mine soil parameters and distributions of Fe, Mg, Ca, Mn, Be, Sc, V, Sr, Y, B, Ba, La, and Nb as well as proportionally calculated distribution plots of Cu, Ni, Co, Cr, and Sr are shown at a scale of 1:750,000.

MAP LIBRARY

The H.W. Wilson Company offers a collection of U.S. road maps in a durable case with index dividers. Map Library contains 28 full-color maps, including 23 road maps that cover all 50 states, regional maps of the eastern and western United States, a detailed street map of Washington, D.C. that includes a sightseeing guide, and wall maps of the United States and the world.

Individual maps are available, but the minimum order is 5 maps. The entire package sells for $49.95 from The H.W. Wilson Company, 950 University Avenue, Bronx, New York 10452, call toll-free 1-800-367-6770.

MINNESOTA WON'T BUDGE

Our article about the abundance of Wisconsin's lakes prompted this response from a displaced Wisconsinite, Bill Johnson, a research fellow with the University of Minnesota's Remote Sensing Laboratory. Bill, who signed his letter "A Wisconsin Native Son", informs us that:

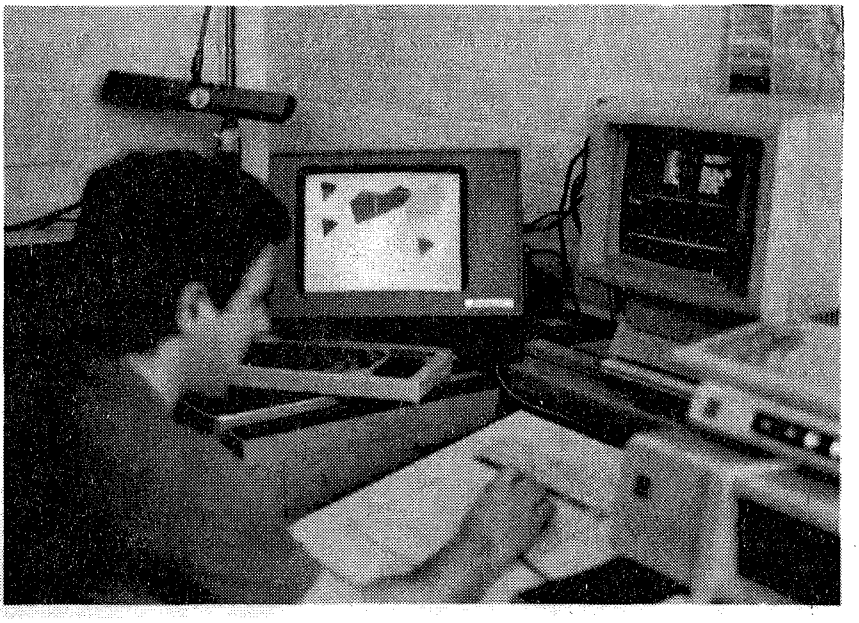
"Move over Minnesota!

Sorry, we are not moving. "10,000 lakes" on our plates was designed to avoid confusion to our neighbor to the east, apparently they could only understand even numbers to a limit of 10,000. Rumor has it the number may be increased to 15,000 after appropriate consultation with our neighbors. Minnesota in fact has 15,291 lakes of 10 acres or more according to the Minnesota Profile section of the Minnesota Guidebook to State Agency Services, 1984-85 edition.

We have 4,059 square miles of inland water of total area of 84,068 square miles, a greater water area than any other state. Minnesota receives no water from any other state and in fact exports water to the Gulf of Mexico, the Atlantic via the St. Lawrence and to Hudson Bay (also from the aforementioned Guidebook).

All kidding aside, I enjoy the Wisconsin Mapping Bulletin so keep up the good work!"

Thanks for the enlightment, Bill. There's still something to be said for quality over quantity....



Dan Hunt, from the Dodge County Survey and Description Department, tries out the SCO's MIRAGE graphics software package on an IBM PC XT with an Envisions color terminal.

ANCIENT EARTHWORKS SOCIETY

The purpose of the Ancient Earthworks Society, Inc., is the promotion of appropriate interdisciplinary investigation and the preservation of sites and other effects of ancient culture in and related to North America. Their interest resides in increasing the public's knowledge and appreciation of such sites and effects. They're currently involved in mapping and studying the geometry of Indian Mounds and related features. Members have investigated flooded sites by scuba diving.

The Ancient Earthworks Society, Inc., is a nonprofit group organized exclusively for charitable, educational and scientific purposes. Charter membership for 1985 is available for $15. For more information, contact Robert Johnson, Secretary, Ancient Earthworks Society, 2706 Ardsley Lane, Madison, WI 53713.

LANDSAT AEROGRAMME

On February 14, the U.S. Postal Service issued a 36 cent aerogramme in honor of Landsat. First day ceremonies were held at Goddard Space Flight Center in Greenbelt, Maryland. The aerogramme is being issued during the 25th anniversary year of the first weather satellites, although Landsat is more modern and is not exclusively a weather satellite.

On the front of the aerogramme, in the upper right hand corner, is a graphic representation of the seven bands of data from the Thematic Mapper, all but one of which are infrared. The other band is thermal, represented by the different pattern on the far right. On the lower left is an illustration of Landsat tracking the eastern U.S. in a generally north-to-south polar orbit.

On the reverse side are three false-color Landsat images of major metropolitan areas in the U.S. They are from left to right: San Francisco, New York City, and Washington, D.C.

Copies of the first-day covers are available from the American Society of Photogrammetry and Remote Sensing, 210 Little Falls Street, Falls Church, VA 22046 for $1.00.

MARK MAINTENANCE CUT

The proposed budget for the National Geodetic Survey (NGS) in fiscal year 1986 significantly reduces the funds available for geodetic mark maintenance. This action is being taken in response to the President's efforts to reduce the federal deficit. This announcement was made recently by William M. Kaula, chief of NGS, Charting and Geodetic Services. The National Geodetic Reference System is comprised of over 750,000 marks nationally. This is of great value to government agencies, private surveyors, aerial survey firms, and others who depend on the system for engineering, mapping, and land use information. NGS is requesting increased voluntary assistance in maintaining the major public investment in the basic geodetic reference system. They request notification of any known plans that would result in mark destruction, submission of recovery notes, and information on marks that need repair. For more information on NGS's voluntary mark maintenance program, contact: National Oceanic and Atmospheric Administration, National Ocean Service, Office of Charting and Geodetic Services, Rockville, MD 20852, phone 301/443-8600.

LANDSAT COMMERCIALIZATION

Following the enactment last July of legislation authorizing the transfer of land remote sensing capabilities from the Federal Government to the private sector, negotiation with the two remaining competitors in the proposal process (Eastman Kodak and EOSAT) continued.

At meetings held in early July, both firms were informed that although their technical approaches were acceptable, their overall proposals were not comparable. Both were asked to revise and resubmit their proposals in accordance with the baseline established by the Source Evaluation Board, which was consistent with the Request for Proposals (RFP) and the legislation as enacted.

Revised proposals were submitted, but these, plus the results of additional financial analysis by the Office of Management and Budget, still indicated that the Government's liability over the life of the program was not being held to an acceptable level. The Administration subsequently decided to put a cap on the amount of financial support that would be given to the establishment of a commercial Landsat system. Secretary of Commerce Malcolm Baldridge and the Director of the Office of Management and Budget, David Stockman, both agreed (with Presidential concurrence) that the cost to the Government should not be permitted to exceed: (1) the run-out cost for operating Landsats 4 and 5, plus (2) a maximum of $250 million of new budget authority for the commercial follow-on system.

Both firms were notified of this decision and, once again, were asked to revise their proposals. Only EOSAT responded with the changes necessary. Kodak declined to compete.

EOSAT, or the Earth Observation Satellite Company, was formed as a company earlier this year for the express purpose of addressing land remote sensing in Commerce's original Request for Proposals. Technically, it is a joint venture of two companies, RCA Corporation and Hughes Aircraft Corporation, with four major subcontractors having been identified as team members. All are recognized, experienced companies in space-related commercial activities, and three are principal participants in the current Landsat 4/5 program. They are as follows:

-Santa Barbara Research Center (SBRC), a subsidiary of Hughes Aircraft Corporation, which would be responsible for the sensor systems on any new land remote sensing satellites. SBRC developed both the multispectral scanner (MSS) and the thematic mapping (TM) instruments currently flying aboard Landsat 4 and 5.

-Computer Sciences Corporation (CSC), which is the current contractor operating the NOAA Landsat system control and processing facilities at NASA's Goddard Space Flight Center. CSC would perform the same function for the commercial program when implemented.

-Earth Satellite Corporation (Earth-Sat), which is a data analysis, processing, and value-added service organization that has been a major supplier to the Landsat user community for more than 14 years. EarthSat would be responsible for setting up and directing EOSAT's applications and marketing support activities.

-RCA Astro-Electronics, a division of the RCA Corporation, which would provide the Landsat 6 and 7 spacecraft. An advanced TIROS-N platform, or derivative thereof, is contemplated. This would be the fifth generation of a polar-orbiting weather satellite that RCA has had experience in building.

EOSAT's proposal provides for: (1) the construction, launch, and operation of two additional Landsat satellites; (2) the development and installation of a supporting ground system; and (3) the sale and distribution of remote sensing data to the world user community. A significant international market development effort and assurance of data continuity in keeping with all current agreements, both national and international, are included as requirements.

PRODUCTS

Products and services from a future commercial system will be similar to those provided now. Standard products will be in the form of film (both black-and-white and color) and computer-compatible tapes (both geometrically corrected and uncorrected). A variety of non-standard products will also be available. At a minimum, these will be compatible with and functionally equivalent to the products furnished by Landsats 4 and 5.

Certain advancements in sensor design have already been identified and are expected to be included on Landsat 6. One of these is to be an additional panchromatic band on the TM, which will provide a means of achieving 15-meter resolution in the image data provided. An option planned on Landsat 7 is a thermal infrared (TIR) capability which could provide four 60-meter-resolution bands in the 8.0- to 11.5-micrometer portion of the spectrum. Such capabilities carry new and interesting implications for cartographers, agriculturists, and mineral explorationists.

EOSAT will maintain an ongoing R&D effort while the Administration, in accordance with legislation, pursues methods to parallel these improvements in an attempt to advance multilinear array (MLA) technology. MLA currently represents the next-generation capability in multispectral Earth observation. A place, in fact, exists on Landsat 7 for an MLA sensor which would have selectable very-near and short-wave infrared channels, a 41-km ground swath, stereo imaging, and cross-track pointing.

At the present time, Landsat 6 is planned for launch in the first quarter of 1988. Landsat 7 would be launched in the second quarter of 1991.

MARKET DEVELOPMENT

EOSAT's marketing organization will be responsible for expanding the current market as well as finding new markets for Landsat products. The strategy calls for the establishment of such elements as:

-An EOSAT data center
-An expanded computer access system
-An office network
-Franchises to value-added firms and to foreign ground stations
-Direct sale of data to volume users.

Both domestic and international users are to be approached, to whom improved data processing capabilities, new products, and a wider variety of products will be offered.

The success of the marketing plan will be a key measure of the success of the entire commercialization experiment. Certain rates of return must be met, and rather early on, to establish a commercially viable land remote sensing industry.

GROUND FACILITIES

Until EOSAT can build and occupy its new ground facilities in 1987, it has proposed to utilize existing Government facilities for satellite control, data acquisition, data processing, product distribution, and archiving. Some parts of this arrangement may remain in effect after 1987 under terms mutually agreeable to EOSAT and the Government. EOSAT's price objective is to establish a state-of-the-art capability through whatever means necessary to provide high quality products and timely delivery.

At this writing, a final draft of the contract that would govern the Landsat commercialization process was being circulated both within the Department of Commerce and at EOSAT headquarters in Arlington, Virginia. Neither organization is obligated at this time, and no funding has been appropriated by Congress.

(source: Landsat Data Users Notes, no. 32, Dec. 1984)

USGS DIGITAL PRODUCTS

The USGS, Mid-Continent Mapping Center recently issued a list of digital products now available for Wisconsin.

Digital Elevation Models		Price/Each
7 available at 7m accuracy		$100

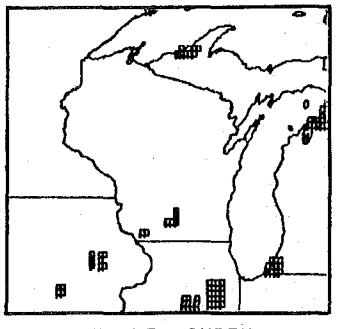
Digital Line Graphs

38	Land Net	$ 20
38	Political Boundaries	$ 20
3	Transportation	$ 50
3	Hydrographic	$ 50
82	Total DLG's	

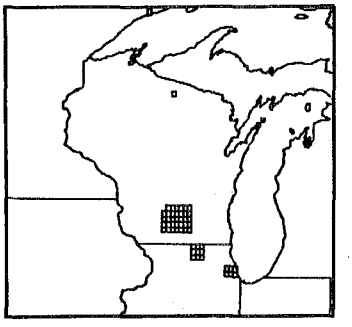
Land Use/Land Cover

13	Land Use/Land Cover	$100
7	Political Boundaries	$ 35
7	Hydrologic Units	$ 35
6	Census Tracts	$ 50
0	Federal Land Ownership	$ 35
6	Composite Grid Cell	$250
39	Total LULC	

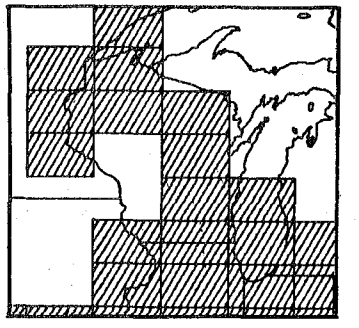
The graphics below were provided by the U.S.G.S.
More information is availble from the State Cartographer's Office.



7M DEM INDEX



DLG INDEX MAP



LAND USE AND LAND COVER INDEX MAP

NCIC AFFILIATES MEET

The U.S.G.S. Mid-Continent Mapping Center organized an April meeting of its National Cartographic Information Center (NCIC) Affiliates. Affiliates from North Dakota, Wisconsin, Missouri, Arkansas, Mississippi, and Illinois (the latter sent one of its two affiliate offices) met to discuss mutual successes and problems. Kansas is considering establishing an affiliate office and sent two people. The Mid-Continent NCIC provided ample opportunity for discussion.

The casual program included a welcome from Larry Borgerding, Chief of USGS-MC and a review of the NCIC State Affiliate Programs and Objectives by John Wood, Acting Chief of NCIC Headquarters in Reston, VA. (John received notice of his appointment as Chief during the course of the meeting.) Presentations covered new mapping programs, digital products, other products and services, the EROS Data Center and data acquisition. Dennis White, Chief of NCIC-MC was always available for comment and explanations. H.C. Meaux and Les Trettenero (conference organizers) reported on NCIC-MC's information acquisition activities. Each state affiliate briefly explained its program. Wisconsin's publications and services surpassed the efforts of the other affiliates since our mission is directly parallel to NCIC's.

The affiliates were unanimous in our dislike of and dismay over the new topo map index. Gone are the familiar, one-sheet indexes. The USGS is slowly replacing the inexpensive sheets with 4-color, multiple-page, 8" x 10½" booklets. State indexes now consist of a permanent booklet showing map coverage and a revisable companion publication listing available maps, prices, and order forms. People find the booklet format difficult to use. Affiliates are worried about receiving an adequate supply of these more costly indexes plus our increased mailing expenses needed to distribute them. Despite their unpopularity, USGS is proceeding to issue the series. At least two states have published their own single sheet indexes (Missouri and Wisconsin). Several states have cut up the booklets and pasted the pieces into one sheet.

It appears the Wisconsin Topographic Mapping Committee was right to insist on finishing the state's 7½' topo quad program in the conventional (non-metric) format. The Arkansas affiliate reported that people purchasing the metric versions actually return them when they realize the contours are not in feet.

USGS received praise for its commitment to distribute cartographic data from all sources. Everyone liked the numerous brochures USGS produces and was eager to automatically receive all those pertinent to mapping.

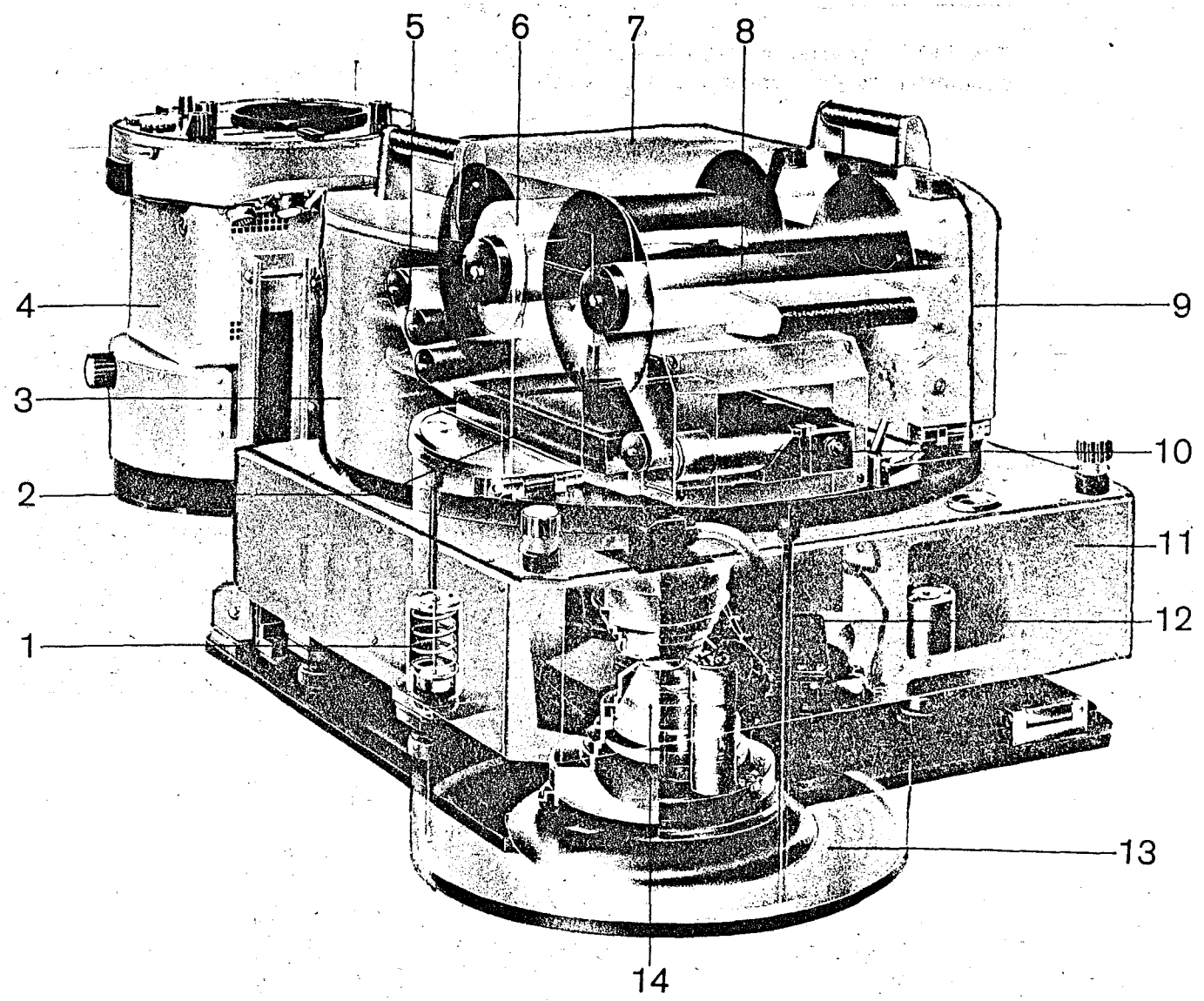
The affiliates were all pleased with the chance to meet and to exchange information. We recommended a meeting every two years plus increased communication between NCIC-MC and the states. As we all stood in the spring sunshine by the flowering crabapple trees for our group photo, we felt we'd accomplished quite alot.

AERIAL CAMERA

I'm sure you've all spent countless sleepless nights wondering just what an aerial camera looks like. A recent issue of the E. Coyote Enterprises, Inc. Newsletter had this nicely labelled illustration of a Jena LMK aerial camera system:

The cost? $100,000+. This camera gives you perfect exposures, with no image motion, from all film types, at any altitude, flown at normal, safe flying speeds under adverse sun angle and sky conditions as well as good conditions. What more could you ask for?!

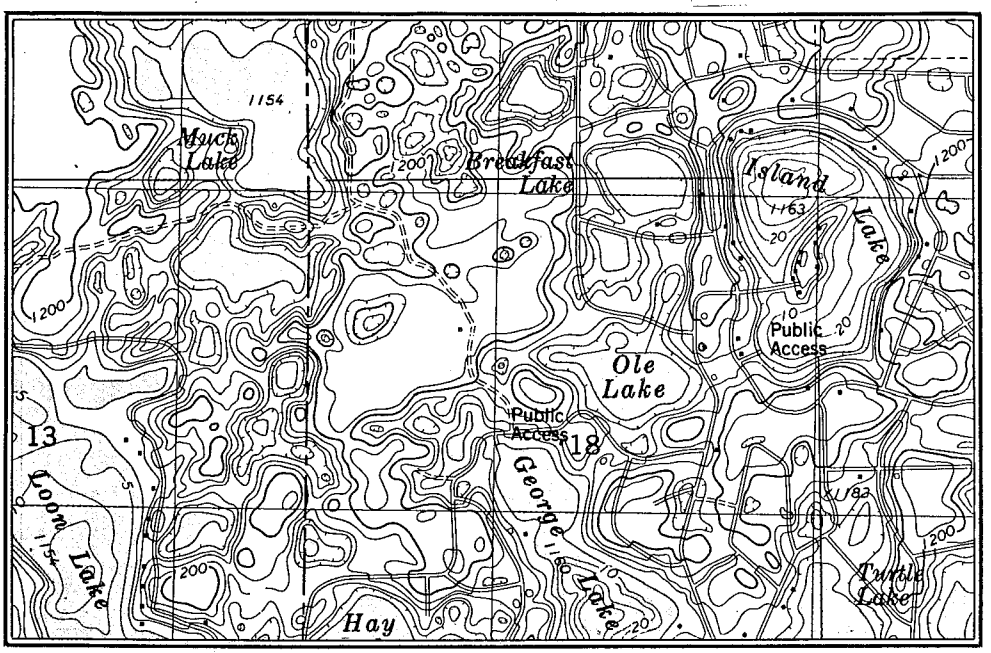
P.S. Aero-Metric Engineering, Inc. of Sheboygan has two such systems.



1. Element for vibration isolation
2. Film pressure plate
* 3. Drive unit
* 4. Control unit
5. Film feed rollers
6. Film take-up reel
* 7. Magazine
8. Film supply reel
* 9. Drive unit
10. Drive of forward motion compensation
* 11. Mount
12. Exchangeable universal shutter
* 13. Lens cone
14. Lens

*MAIN UNITS

TOPO QUIZ



One of the recently published 7.5' topographic quads in far northern Wisconsin is named for one of the lak it covers. The quad contains a large collection of interesting names for other lakes and features, such as: Lucius, Big and Sucker Lakes (actually part of a river), Sand Lake, Loon Lake, Hay Lake, George Lake, Ole Lake, Turtle Lake, Muck Lake, Breakfast Lake, Blue Lake, Bass Lake and Rush Lake. Also named are Mays Rip Rapids, The Falls Rapids, Big Twin Rapids, Little Twin Rapid and Wildcat Rapids. The quad also identifies a "footbridge".

(answer: Island Lake Quad, on the Bois Brule River near the Douglas-Bayfield County boundary, township 45/46 North.)

UW ANTHROPOLOGIST STUDIES AZTEC MAP

It may seem that we live in a world gone mad over lawsuits, but disputes over money are nothing new to University of Wisconsin-Madison anthropologist Herbert Harvey.

Harvey is studying a centuries-old Aztec map that is thought to describe lands being contested in an inheritance battle. Harvey, who discussed his finding with other anthropologists at the 8th Annual Midwest Mesoamerican Conference recently in Madison, said the chart contains a wealth of information about Aztec society.

"The map was completed soon after an Aztec nobleman was executed by order of the Spanish Inquisition," Harvey said. "It's the only known map dealing with property sizes and values that was drawn within a generation of the Spanish invasion of Central America.

"Accurate records were essential because they served as a basis for taxation and also because Aztec inheritance laws were based on how property was acquired. But we don't know why, in this case, they chose to record the extent and value of this nobleman's holdings in map form" he said.

Drawn on native-made paper, the map depicts 80 pieces of property belonging to three different classes of people. Divided into quadrants, the map uses three colors of ink: black for the map's hieroglyphs and boundaries, red to signify property owned by the Aztec nobility and brownish ink to make notations.

Using the map, Harvey and other anthropologists can get an idea of how much land a typical Aztec nobleman owned and how much he leased to or from commoners.

Because the map was drawn about 1540, within 20 years of the Spanish arrival, it gives anthropologists a rare look at Spanish influence on Aztec custom. But to Harvey, a specialist in Aztec arithmetic, the map contains much more than just a peek an an ancient inheritance battle amid the turmoil of the Spanish conquest of Central America.

For Harvey, the map's hieroglyphs, or pictorial words, are important because most of them deal with numbers or dimensions. "What was confusing," said Harvey, "was that although the map indicates property dimensions, units of measure are usually left out. It was only recently that I realized that there are two different scales used on the map."

That would be like having a modern map marked in yards and meters, but with no indication of which numbers went with which scale, said Harvey. Although he is still trying to figure out why two scales were used, he had determined estimates of each measure's length.

According to Harvey, one of the scales was probably based on a "span" - the distance between the fingertips of outstretched arms. He judged the Aztec span to be about six feet. The other scale, he said, is similar to the archaic English rod, although only about half as long at a little more than eight feet.

"Another unsolved puzzle," said Harvey, "is that only one estate, owned by the nobleman, is marked in spans. The rest are all marked in the longer rod."

While people have been studying Aztec culture for centuries, the map, rediscovered about 20 years ago in the Library of Congress, offers scientists new insight into everyday Aztec life.

"It's not often that we get a real quantitative addition to our knowledge of Aztec culture," said Harvey. "It's very significant that we now have actual figures for how much land was held by the different social classes and how it was passed on within families."

(source: Sue Reynard, University News Service)

SURVEYING POINTS TO THE STARS

Prof. Jim Scherz (UW-Madison, Civil and Environmental Engineering) has used surveying techniques and geometry to establish correlations between rock cairns, found at Wisconsin Rapids and Madison, and the stars. This scientific process is the basis of a new discipline called archeoastronomy.

Scherz has surveyed the cairns at the Wisconsin Rapids site and found they could be used to precisely sight the rising sun on solstices and equinoxes. (Refer to the January 1982 RS Broadcast supplement for more information.) The Madison rock formation charts a star configuration which correlates with midnight about November 14th. That date was celebrated as the ancient Irish New Year, the Aztec New Year, and used also by the Scandinavians and the Celts. The well known Chamberlin Rock on UW's Observatory Hill has proven to be with its one sheer face in line with the noonday sun of the soltice. Scherz is a co-founder of the Ancient Earthworks Society (see related story). For more information, contact the Society or Prof. Scherz, 1206 Engineering Bldg., U.W., Madison, WI 53706.

PUBLICATIONS OF INTEREST

United States Treasure Atlas; Vermont, Virginia, Washington, West Virginia, WISCONSIN, Wyoming (1985) by Thomas Terry is volume 10 in a series of state map guides to lost, buried, and sunken treasure. The Wisconsin section includes a black-and-white, page-size index map and approximately 950 entries. The potential treasure sites are grouped by county; the counties are not listed in alphabetical order but in order of their geographic location. Many of these sites are ghost towns. The 10th volume, which includes Wisconsin, sells for $9.95 plus $1.00 postage and handling. Wisconsin residents add 5% tax. Make checks payable to the Specialty Publishing Co., P.O. Box 1355, La Crosse, WI 54602.

Seminar on the Multipurpose Cadastre: Modernizing Land Information Systems in North America (Dec. 1984) Bernard J. Niemann, Jr., Editor. The U.W.-Madison Institute for Environmental Studies conducted a series of land record seminars during the spring of 1984. This IES Report 123 includes 22 papers by the 31 speakers who represented all levels of government, as well as academia, and private enterprise. The 320-page report offers the diverse perspectives one would expect from such a wide-ranging group. Copies are available for $7.50. (Make checks payable to the UW-Madison.) Mail your order to the IES Publications Office, 120 WARF Building, Madison, WI 53705.

Thematic Mapping Using Microcomputers (1985) a special issue of Computers and Geosciences (v. 11, no. 2) by V. Gardner and D.J. Unwin, editors, published by Pergamon Press Inc. provides a survey of the state-of-the-art in thematic mapping on stand-alone microcomputer systems.

Map Collections in the United States and Canada (1985) by David Carrington and Richard Stephenson. Now in its fourth edition, this 192-page work offers an exhaustive directory to map collections. The 804 detailed entries are easily accessed by a comprehensive index. It is published by the Special Libraries Association, 235 Park Avenue South, New York, NY 10003 for $35.00.

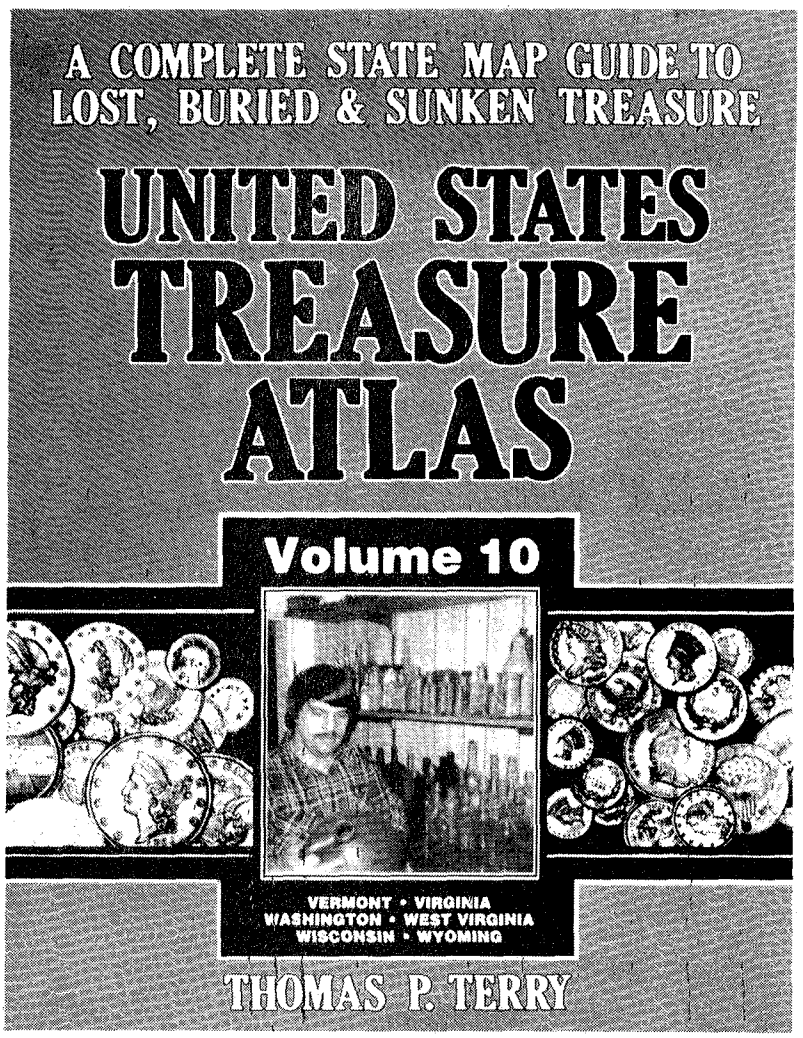
FDC Newsletter is a new publication of the Federal Interagency Coordinating Committee on Digital Cartography. The National Mapping Division of the U.S. Geological Survey plans to publish it occasionally. The purpose of the newsletter is to establish a forum for the exchange of information on Federal digital cartographic activities for people who work with, use, or are simply interested in digital cartographic data. For a free subscription, contact Larry Amos, 516 National Center, U.S.G.S., Reston, VA 22092, phone 703/860-6791.

Digital Data Products describes National Geodetic Survey digital data base products. Sample formats and output are shown for horizontal, vertical, and gravimetric geodetic data. The 14-page handbook is free from NOAA/National Geodetic Information Center (N/CG174), Rockville, MD 20852, or phone 301/443-8623. A free list of NGS publications is also available.

Technological Transition in Cartography (1985) by Mark S. Monmonier is a comprehensive overview of the rapid and diverse technological transformations taking place in cartography. The 304-page (87 pages of illustration) sells for $25 (clothbound). Wisconsin residents add 5% tax. Available from the University of Wisconsin Press, 114 N. Murray Street, Madison, WI 53715, phone 608/262-8782.

Cartographical Innovations (1985) edited by Prof. Arthur H. Robinson (UW-Geography Dept. Emeritus) and Dr. Helen Wallis (British Library, London). This handbook of cartographic terms to 1900 is an excellent reference work for anyone interested in the history of cartography. Each term has a thorough definition including the main facts of its history, and a bibliography. A comprehensive index makes the glossary easy to use.

Cartographical Innovations is available from the publisher, Map Collector Publications (1982) Ltd., 48 High Street, Tring, Herts HP23 5BH, England. The price is £23 (p + p £2). Internationally accepted credit cards may be used; expiration data must be indicated. Telephone (044282) 4977.



THE MAPPING OF WISCONSIN SINCE 1832

BY

CHRISTOPHER BARUTH

A Thesis Submitted in Partial Fulfillment of the Requirements for the Degree of Master of Science in Geography at the University of Wisconsin-Milwaukee, December 1979

Second Installment

Editor's Note: This article is the second in a series of four installments from Christopher Baruth's Masters thesis. The first section presented an overview of early triangulation and the beginning of topographic mapping in Wisconsin. Refer to Bulletin v. 11, no. 1, January 1985, p. 13-16.

The Period of Transition, 1893-1945

After the initial burst of activity that produced the first 25 topographic maps, the state went through several years of inactivity insofar as topographic mapping was concerned.

As mentioned earlier, the plan of the U.S.G.S. was to cover the United States using scales appropriate to the settlement of the area. It was, however, improbable that a formal plan, showing what scale was to be used where, was ever drafted. No mention of such a plan was made in any of the reports or publications of the Geological Survey, nor does the U.S.G.S. presently have knowledge of such a plan.[24]

Furthermore, the manner in which the original 25 sheets came into being would indicate a certain haphazardness in department policy. Sheet publication was presumably not in mind when Buell was sent into the field to map the glacial deposits for Chamberlin. It was only later that the decision was made to prepare the sheets for publication. This being the area of Wisconsin's heaviest rural and urban population probably influenced the selection of the 1:62,500 scale.

In the decade following the publication of the first 25 maps, or specifically 1897 through 1903, a total of thirteen sheets was produced. Significantly, seven of these were 30 minute quadrangles,[25] the only ones produced in Wisconsin. Since 30-minute quadrangles cover four times as much ground area as 15-minute quadrangles, the total area surveyed during that period is equivalent to thirty-four 15-minute quadrangles, though fewer staff hours are needed to produce a 30-minute quadrangle than four 15-minute quadrangles.

The maps produced during this period were all agency initiated, and on the one hand, show the continuation of a systematic plan to cover the state, and on the other hand, reveal what must have been viewed as the apparent futility of covering such a large area at the slower pace required in mapping 15-minute quadrangles.

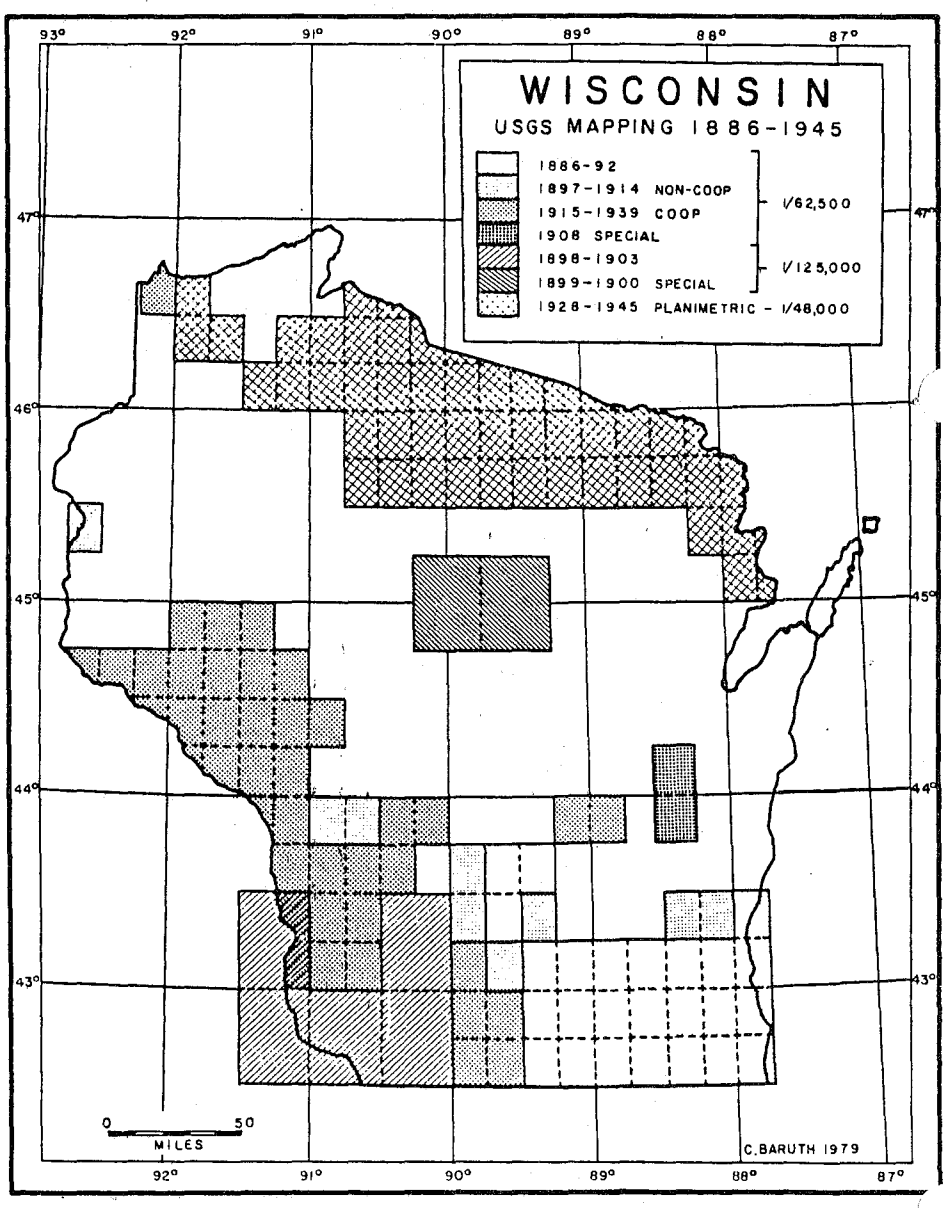


Fig. 2 Wisconsin topographic mapping 1886-1945.

continued on next page

Recognizing that map coverage would not be a reality in north-central Wisconsin for many years to come, the U.S.G.S. produced the Marathon and Wausau special sheets in 1899 and 1900. These sheets are like 30-minute quadrangles in all respects, except that they are not bounded by whole degree and half degree parallels and meridians as was necessary for the standard 30-minute quadrangles (Fig. 2).

The Fond du Lac and Neenah special sheets, produced in 1908, were of a different nature. These otherwise conventional 15-minute quadrangles were extended on the west to include the urban area on that side of Lake Winnebago.

The only other special sheets produced during this period were the Milwaukee, Geneva-Racine and Gogebic Iron Range sheets. The Milwaukee map was merely a recompilation at the same scale of other topographic maps so as to cover the metropolitan area. The Geneva-Racine sheet was a 1:250,000 composite of six quadrangles in the southeast corner of the state. What was special about the Gogebic Iron Range map was that only the Gogebic Iron Range was mapped, on two sheets.

If the turn of the century plan was to map a large portion of Wisconsin at scales smaller than 1:62,500, the plan was early abandoned, for the last of the seven 1:125,000 maps was surveyed in 1903.[26] Following the survey of the Richland Center map in 1903, topographic activity was again curtailed for several years. Mapping was resumed in 1907, but for only two years in which a total of four maps was produced. Six years then passed before the next map was surveyed; this was in 1914.[27]

This slow rate of progress evidently caused some concern in the state. It was no doubt seen that even at the speeded-up rate of one sheet per year, 215 years would be needed to complete the task, and this isn't taking into consideration the large amount of revision necessary over such a long period of time.

Hence, in 1914, the state entered into a matching funds cooperative mapping venture with the U.S.G.S.[28] The first three maps to come out of this cooperation were produced in 1915.[29] With three maps per year it would still take 72 years to finish the project.

World War I intervened, bringing activity to a standstill until 1919 when an additional two sheets were added to the list. Then, the average year of the 1920's saw an additional three maps produced.[30]

This slow progress of topographic mapping was evidently not confined to Wisconsin. In 1924, Congress, with little debate, passed to so-called Temple Act which provided for the "completion of the topographical survey of the United States." This act stated that the President was:

> authorized to complete, within a period of twenty years... a general utility topographical survey of the territory of the United States...and the preparation and publication of the resulting maps and data...[31]

In the report of the House Committee on Interstate and Foreign Commerce, the committee to which the bill was referred, a letter from Dr. W.O. Hotchkiss of the Wisconsin State Highway Commission is quoted:

> The one particular thing which is of greatest urgency in its call for these maps, is our state highway work, on which we are spending many millions of dollars a year, and it is of very great importance as a money saving proposition to the public that this topographic work be pushed to an early completion.[32]

Though the bill was readily passed, funds to significantly speed up the work were not forthcoming. Hence, at least in Wisconsin, the effect of the bill on topographic mapping went unnoticed. The depression of the 1930's had the effect of retarding Wisconsin's mapping program even further. No topographic maps were produced in 1931, 32 or 33, and the state provided no funds for the program between 1932 and 1938. Additional funds for a small amount of topographic mapping were provided by the Public Works Administration. These funds helped to complete the Chippewa Falls, Elk Mound, Osseo and Arkansaw sheets.[33]

More significant to the completion of the topographic survey than the Temple Act was the announcement in the 1925 U.S.G.S. Annual Report that "the use of aerial photographs in topographic mapping greatly increased during the year (1924-5), owing to the development of satisfactory methods of compilation."[34] At first, aerial photographs were employed in the construction of map bases. The contour lines still had to be sketched in by hand.

Aerial photographs for base mapping found their way into general use by the late 1920's, but contour mapping from stereo photographic coverage was slower in coming. The first regular use of stereophotogrammetry was in the mapping of the Tennessee Valley for the T.V.A. in the mid-1930's. After World War II, all U.S.G.S. maps were compiled photogrammetrically, from aerial photos, with additional inputs from preliminary ground control surveys and post-compilation field checks.

The Wisconsin mapping program first employed aerial photography in 1928 when the Alma, Cocrane and Three Lakes quadrangles were surveyed.[35] The Alma and Cocrane sheets were topographic and required the usual manual field contouring. The Three Lakes quadrangle, however, was the first of Wisconsin's planimetric (without contours) sheets. These sheets, which were eventually to cover much of the state, were compiled entirely from aerial photographs.

The planimetric maps were brought into being largely through the efforts of the State Highway Commission, which took an early interest in the state's mapping program. Beginning in the early 1920's, the mapping program was arranged to complement Wisconsin's highway building program. The highway routes were surveyed first, then the rest of the quadrangle was later filled in.[36] In 1925, the State Highway Commission authorized an expenditure of $800 for "airplane mapping" which was to be done by the Wisconsin Geological Survey, in cooperation with the U.S.G.S.[37]

The rate of progress of the topographic survey was, no doubt, viewed by some in the state with a sense of despair. In 1922 for example, over 40% of the United States was mapped, but only 26% of Wisconsin.[38] Besides, much of Wisconsin's mapping was in need of revision or at scales smaller than currently used. No doubt, for this reason, the fast and inexpensive planimetric map was viewed as a necessary expedient. The scale adopted was 1:48,000, which was the smallest scale used on the larger sheet size introduced about a decade earlier. No doubt, the larger scale was viewed as a compensation for the lack of contours.

The first two planimetric maps were produced in 1928 and 1930, though it was not until 1938 that serious production of these maps began, with a half-dozen or more produced yearly. Of the planimetric maps, State Geologist Bean wrote to the U.S.G.S. in 1945:

> [Planimetric maps] are not entirely satisfactory to you or me, they have been such an improvement on previously existing maps that they have been satisfactory to the public. Thousands have been sold, and we have back orders now awaiting receipt of a new supply from Washington. I do not think we should spend money on revising maps until we have accomplished the big job of mapping the area for which no satisfactory maps are available.[39]

The planimetric maps progressed in their coverage from north to south, and when discontinued in 1959, there were but three unmapped quadrangles in the state. These were the Adams, Oxford and Montello quadrangles.

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Cooperation

To help speed the process of topographic mapping, the state, in 1914, began to contribute funds for topographic surveys. At this time the state funds were provided by the Wisconsin Geological Survey.[40]

Funds dropped off sharply in 1931. This was probably the result of depression cost cutting. During the next few years, a small amount of topographic activity was supported by the Public Works Administration. Beginning in 1938, cooperative funds, primarily derived from the State Highway Commission, became available once more. This resulted in only three topographic maps being produceed between 1938 and the outbreak of World War II, during which the only maps produced were planimetric.

BIBLIOGRAPHY

[24] L.H. Borgerding, personal letter.

[25] See U.S.G.S. Annual Reports for the years 1898-1904.

[26] Idem, Annual Report (1904), p. 129.

[27] See U.S.G.S. Annual Reports for the years 1908-1915.

[28] Idem, Annual Report (1915), p. 119.

[29] Idem, Annual Report (1916), p. 118.

[30] See U.S.G.S. Annual Reports for the years 1920-1930.

[31] Temple Act, 43 Stat. 360 (1925).

[32] H.R. Rep. No. 1011, 68th Cong., 1st sess. 4 (1925).

[33] See U.S.G.S. Annual Reports for the years 1935-1937.

[34] Idem, Annual Report (1925), p. 59.

[35] Idem, Annual Report (1929), p. 48.

[36] Idem, Annual Report (1922), p. 49.

[37] E.F. Bean, Wisconsin State Geologist, to Charles Thompson, Madison, 13 January 1930, in files of Wisconsin Geological and Natural History Survey.

[38] U.S. Geological Survey, Annual Report (1922), p. 49.

[39] E.F. Bean to C.L. Sadler, Div. of Engineer, U.S.G.S., Madison, 16 February 1945, in files of Wisconsin Geological and Natural History Survey.

[40] See U.S.G.S. Annual Reports for the years 1915-1932.

(end of second installment)

Will funding once again become available? What is the fate of the 1:48,000 series? What in the world is a Bilby tower? These and other fascinating facts await you in the next chapter of The Mapping of Wisconsin coming in July. Be there.

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